



UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, DC 20233-0001

MASTER FILE

January 6, 2000

DSSD CENSUS 2000 PROCEDURES AND OPERATIONS MEMORANDUM SERIES # L- 3
DSSD CENSUS 2000 DRESS REHEARSAL MEMORANDUM SERIES # E-7

MEMORANDUM FOR Howard Hogan
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Subject: Evaluation of Census 2000 Dress Rehearsal Undeliverable As
 Addressed Mail Returns

This memorandum contains the Evaluation of Census 2000 Dress Rehearsal Undeliverable As Addressed Mail Returns. This memorandum documents undeliverable as addressed rates from the Sacramento dress rehearsal site and the mailout/mailback portion of the South Carolina dress rehearsal site. Three different undeliverable as addressed rates are defined in order to accommodate the dress rehearsal's use of the blanket replacement questionnaire. Rates are presented for the entire sites as well as at the census tract level. Also included are frequency counts for housing units designated undeliverable as addressed according to final occupancy status, household characteristics for those undeliverable as addressed housing units with an occupied final status, a discussion of consistency in undeliverable as addressed annotation between the two mailings, and graphical depiction at the tract level of the effect that undeliverable as addressed housing units have on nonresponse rates. If you have any questions, please do not hesitate to contact Rob Dimitri at (301) 457-8026.

Attachments

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Section 1. Background

1.1 General Information

For the Census 2000 Dress Rehearsal, questionnaires that were part of the mailout universe were distributed by members of the United States Postal Service (USPS) as part of their regular routes. The questionnaires were delivered using first-class postage. Hence, the USPS identified those questionnaires that were undeliverable as addressed (UAA), whether undeliverability was due to vacancy of the housing unit or some other reason.

The UAA universe was classified according to the reason for undeliverability. That reason classified the housing unit as "vacant" or "other" - the latter category possibly referring to housing units designated by the USPS as duplicate, demolished/new construction, nonresidential, no such address, no such apartment, PO Box, no mail receptacle, other, or no reason written. In the UAA study for the 1990 Census, a sample of UAA questionnaires was selected. The reasons for undeliverability from the questionnaires in the sample were data captured and estimates for the entire UAA universe were produced. The Census 2000 Dress Rehearsal also did not keep the type of UAA-Other within a data file.

In the dress rehearsal, the official UAA status of both the initial questionnaire and the replacement questionnaire was used in determining UAA status for census purposes. A USPS status indicating UAA-Vacant on either or both of the questionnaire mailing packages placed the housing unit in the UAA-Vacant universe. For the case in which the other mailing was successfully delivered, a mail return of that questionnaire would classify the housing unit as a successful respondent. That housing unit would not be a member of the vacant followup universe, assuming that the questionnaire was received before the vacant followup universe had to be defined. Those housing units classified as UAA-Other on either or both of the mailings entered the nonresponse followup (NRFU) universe along with the other nonrespondents. Again, for the case in which one mailing was successfully delivered and returned, entry into the NRFU universe was superseded if the return occurred before the universe's definition. In the case where only one of the mailings indicated vacancy and the other mailing indicated UAA-Other status, the vacant designation took priority and the housing unit entered the vacant followup universe.

For the Sacramento site, the UAA cases were subject to a sampling rate described below. That rate was dependent upon whether the case was in the vacant followup universe or the NRFU universe. Actual followup of UAA cases utilized a sample larger than prescribed due to the need to satisfy tract and block minimums and the need to sample Integrated Coverage Measurement (ICM) blocks in their entirety.

Followup was completed for all UAA cases in the South Carolina site, whether those were in the vacant universe or in the NRFU universe.

Though a replacement questionnaire was mailed to all members of the mailout/mailback universe in the dress rehearsal, current plans dictate that there will be no replacement questionnaires for Census 2000.

This evaluation poses questions which deal with a variety of UAA rates that could be calculated from the Census 2000 Dress Rehearsal and patterns related to the UAA cases.

1.2 Vacant Undeliverable as Addressed - UAA_{Vacant}

Census followup for the 1990 Census indicated that 60.6 percent of the housing units the USPS had deemed vacant housing units were correctly classified (see Reference 3/). Housing units receiving the vacant designation in the dress rehearsal had a universe unto themselves for study.

The dress rehearsal sampling plan made use of a three in ten sample of the UAA_{Vacant} universe, which was put into effect at the Sacramento site. Suppose that 40 percent of the housing units within a tract were subject to NRFU. Of the remaining 60 percent at the tract, 50 percentage points corresponded to successful mail returns and 10 percentage points had a UAA_{Vacant} status. These UAA_{Vacant} housing units would be sampled at approximately a three in ten rate. Hence, approximately 53 percent of the housing units in the tract will have data dictated by a mailback response or an enumerator's UAA_{Vacant} followup. The missing seven percentage points, which are the remaining housing units designated as vacant by the USPS, are estimated data based on housing unit data corresponding to the three percentage points in the sample. Therefore, it follows that each sampled vacant housing unit represents approximately an additional two and a third vacant housing units by the three in ten sampling rate.

Those housing units that were designated UAA_{Vacant} at the South Carolina site were all subject to followup.

1.3 Non-vacant Undeliverable as Addressed - UAA_{Other}

Those mailout housing units under this heading become part of the intimidating bulk which is the NRFU universe. The NRFU universe is composed of those cases requiring a personal visit by an enumerator due to lack of response.

The sampling plan that was utilized in Sacramento called for the NRFU procedure to attempt to reach 90 percent of the housing units in the final tally for each designated census tract. For example, if 60 percent of the households within a certain tract respond or have a UAA_{Vacant} status, then the remaining housing units were sampled at approximately a three in four rate in an attempt to contact the prescribed 90 percent. In this example tract 75 percent would be the expected UAA_{Other} contact rate. The expected contact rate for UAA_{Other} cases would consequently vary according to the response rate and the UAA_{Vacant} rate within individual tracts. The expected contact rate for UAA_{Other} cases across all Sacramento tracts would of course be dependent on the NRFU rate prescribed for all of the tracts within the entire site.

Since the South Carolina site used 100 percent NRFU, contact should have been attempted for all UAA_{Other} cases.

1.4 Mailout Information

1.4.1 Mailout Questionnaires

All housing units in the mailout/mailback portion of the test (all of the city of Sacramento and approximately 79 percent of the South Carolina site) were mailed one or more of the following self-enumeration questionnaires:

- DX-1, Short-form Questionnaire (English)
- DX-1(S), Short-form Questionnaire (Spanish)
- DX-1(C), Short-form Questionnaire (Chinese)
- DX-2, Long-form Questionnaire (English)
- DX-2(S), Long-form Questionnaire (Spanish)
- DS-2(C), Long-form Questionnaire (Chinese)

In all cases, the housing units were mailed the designated form, short or long, written in English. In targeted areas in Sacramento, the housing units also received the appropriate form (short or long) written in Spanish or Chinese. Whichever forms the housing units received during the first mailing, they received again at the time of replacement mailing. The mailout mailback portion of South Carolina only received English forms.

1.4.2 Mailout Implementation Plan

The USPS delivered the following mailing pieces as the schedule shows below:

<u>Mailing Piece</u>	<u>Delivery Date</u>
Advance Notice	3/25-27/98
Initial Questionnaire [DX-1, 1(S), 1(C), or DX-2, 2(S), 2(C)]	3/28-31/98
Reminder Post Card	4/03-05/98
Replacement Questionnaire [DX-1, 1(S), 1(C), or DX-2, 2(S), 2(C)]	4/15-17/98
<i>Census Day</i>	4/18/98

Section 2. Methodology

2.1 Definition of UAA Rates

The UAA rate tells us how many housing units in the mailout/mailback universe were classified as undeliverable during the mailout process. Define UAA_t as the UAA rate for site t, where t = 1 (Sacramento) or 2 (mailout/mailback portion of South Carolina). In addition, we calculate a UAA-Vacant rate and a UAA-Other rate (h=1 for housing units classified vacant and h=2 for housing units classified undeliverable for other reasons).

Therefore, $UAA_{ht} = X_{ht} / Y_{ht} * 100$, where

X_{ht} = Number of housing units in the mailback universe for which no response to either the initial or replacement questionnaire was received and for which the appropriate (see below) questionnaire(s) were returned by mail and annotated by the USPS as being UAA. A housing unit was counted as a successful respondent if a corresponding questionnaire had a check-in date of May 7, 1998 (the late cut for definition of the NRFU universe), or earlier. Responses received via Telephone Questionnaire Assistance (TQA) or Be Counted Forms (BCF) do not affect this universe.

Y_{ht} = Number of housing units in the mailout/mailback universe that were delivered questionnaires by the USPS.

The UAA rates are defined to some degree in the document “Revision: Documentation of Response and Return Rates for the 2000 Dress Rehearsal and Census 2000” (see Reference 2/). However, the use of an initial and replacement questionnaire creates some flexibility in calculating the rates for this document. Hence, three different UAA rates are included in the results.

The mailing strategy plan for Census 2000 does not make use of a replacement mailing. Therefore, in order to best relate the results of the dress rehearsal with Census 2000 procedures, the first UAA rate we define only takes into account the initial mailing in the dress rehearsal. (However, response to the replacement questionnaire still renders a housing unit not eligible for this UAA universe.)

We define another rate such that a housing unit is classified UAA if no response was received and if both an initial and replacement mailing were returned with the UAA annotation. For this rate, we have defined the initial questionnaire’s classification as taking priority. For example, if the initial mailing was classified UAA for a reason other than vacancy but the replacement mailing was classified UAA due to vacancy, then the housing unit would be considered part of the UAA-Other universe.

Operationally in the dress rehearsal, housing units that did not respond with either mailing and had at least one corresponding UAA vacant mailing were designated as being in the UAA vacant followup universe. Housing units classified as being UAA for other reasons became part of the NRFU universe. The third UAA rate we define conforms most closely to this procedure. If no response was received from a housing unit via an initial or replacement questionnaire and either mailing was returned with a UAA annotation, then the housing unit is counted toward the total UAA tally. The housing unit is counted toward the UAA-Vacant percentage if either mailing had that classification.

2.2 Questions to Be Answered

2.2.1 **What were the overall dress rehearsal UAA rates for the Sacramento site and the mailout/mailback portion of the South Carolina site?**

Included in this document are tables by site of the UAA rates as defined above. The Mail Return Check-In Files produced by Decennial Systems and Contract Management Office (DSCMO) for Decennial Statistical Studies Division (DSSD) were used to produce results for this and all subsequent questions in this study.

2.2.2 **What were the dress rehearsal UAA rates according to census tract within each site?**

Tables for each of the sites that detail the previously defined UAA rates for each census tract are included. This information is useful in identifying the nature of specific areas with deliverability problems.

2.2.3 **What was the breakdown of housing units in the UAA universes according to final status (occupied, vacant, delete) as designated on the Census Edited File (CEF)?**

In order to limit the workload in this study, we restricted the UAA universe to only those housing units that were classified UAA via the initial mailing. These frequencies provide us with a measure of how effectively the USPS used UAA annotation in classifying housing units.

2.2.4 **For those housing units designated UAA that had a final status of occupied, what were the characteristics of these households with regard to tenure, number of household members, Hispanic origin of the householder, and race of the householder?**

Again, we limit the study to only housing units that were classified UAA via the initial mailing. Here we present results that demonstrate if housing units with certain characteristics had higher undeliverability rates than other housing units. For example, did the USPS have more trouble delivering to rented housing units than to owned housing units?

Respondents were allowed to mark more than one race on their questionnaires. If the person data indicated only one race, then for this study that person was counted as being of that race. If two or more races were indicated, then that person was simply designated multiracial regardless of which races were indicated.

2.2.5 What was the rate of agreement between the UAA classifications for the initial and replacement mailings?

Since this was the first usage of a blanket replacement mailing, we are interested in the consistency in UAA classification between the initial and replacement mailings. Some of the questions that can be answered using this study are: How often was only one of the mailings returned as a UAA? How often were both returned with one being classified vacant and the other mailing classified UAA for other reasons? How often was one mailing returned UAA but the other mailing yielded a successful response?

2.2.6 How did nonresponse rates vary according to tract when taking UAA rates into consideration?

A nonresponse rate generally refers to the portion of the mailout/mailback universe that should have received a questionnaire but did not reply. Taking UAA rates into consideration implies an adjusted nonresponse rate; housing units for which we know delivery failed are not counted toward the nonresponse rate in this study. Henceforth in this document, nonresponse rate will therefore refer the portion of the mailout/mailback universe that did not reply and was not part of the chosen UAA universe. Obviously rates of undeliverability can vary according to tract. This information can be used to ascertain whether or not the nonresponse rate in a given tract was caused by the "usual" lack of cooperation by housing unit occupants or if a relatively high rate of undeliverability adversely affected response rate.

Section 3. Limitations

The results from this evaluation cannot be generalized to any area beyond the dress rehearsal sites. This evaluation provides operational data. It does not provide an assessment of the quality of mail return data.

Response status in this evaluation is based on check-in by the National Processing Center (NPC) staff rather than the date that the form was actually completed. Therefore, time lags in mail delivery from dress rehearsal sites to Indiana and the timing of shifts for check-in impact the check-in date information. Also, processing and USPS delays could both be factors to different degrees in different areas.

Questionnaires were received by respondents in the Sacramento site as early as March 24. The scheduled delivery dates were March 28-31.

It also appears that the advance letters were delivered a few days earlier than scheduled in the Sacramento test site.

About 700 Chinese long form replacement questionnaires were mailed on March 26 in Sacramento. The scheduled dates were April 15-17.

Two counties in South Carolina -- Chester City and Lancaster County -- have undergone address system renumbering that was not reflected in the DMAF, the Master Address File (MAF), or the census geographic database - the Topologically Integrated Geographic Encoding and Referencing (TIGER). This renumbering corresponded to between 2,000 and 3,000 questionnaires. The USPS returned most questionnaires as undeliverable in Lancaster County. Pseudo tract mail response rates ranged from 23 to 53 percent in Chester City which means the USPS was able to deliver some portion of the questionnaires.

There were also about 2,000 questionnaires returned in Sacramento because they had bad labels and could not be delivered. A decision was made on April 21 to create new mailing packages with correct labels for these cases and mail them out.

Section 4. Results

4.1 Basic UAA Rates for Dress Rehearsal Sites

Table 1. UAA Rates for Entire Sites

	UAA Rate for Initial Mailing			UAA Rate for Both Mailings			UAA Rate for Either Mailing		
	Total	Vacant	Other	Total	Vacant	Other	Total	Vacant	Other
Sacramento	8.7%	3.7%	5.0%	5.7%	2.4%	3.2%	10.3%	4.9%	5.4%
Mailout/Mailback Portion of South Carolina	11.7%	3.0%	8.7%	8.4%	1.9%	6.5%	13.7%	4.2%	9.4%

Notice that UAA_{vacant} rates were within a percentage point of each other across both test sites, but that the UAA_{other} rates were three to four percentage points higher in South Carolina. This could imply that the quality of address list was lower in South Carolina than it was in Sacramento. It also could imply that South Carolina had more addresses that the USPS did not recognize as deliverable.

The size of the Sacramento mailout/mailback universe was 173,483 housing units. The size of the South Carolina mailout/mailback universe was 224,009 housing units.

4.2 UAA Rates by Tract in Dress Rehearsal Sites

Included in Appendix A are Tables 16 and 17, which list the UAA rates defined above for each of the tracts within the Sacramento site and the South Carolina mailout/mailback

site. Based on those tables, the 103 tracts in Sacramento varied in size from one to 6,567 housing units, and the average tract size was approximately 1,684 housing units. The 137 tracts in South Carolina varied in size from ten to 5027 mailout/mailback housing units, and the average tract size was approximately 1,635 housing units. Table 2 contains the ranges across the tracts for the three UAA rates.

Table 2. UAA Rate Ranges for Census Dress Rehearsal Tracts

		Initial Mailing Only	Both Mailings	Either Mailing
Total UAA Rate, Sacramento	Minimum	0%	0%	0%
	Maximum	43.7%	41.7%	45.7%
Vacant UAA Rate, Sacramento	Minimum	0%	0%	0%
	Maximum	14.7%	11.4%	17.2%
Other UAA Rate, Sacramento	Minimum	0%	0%	0%
	Maximum	42.0%	40.5%	42.6%
Total UAA Rate, South Carolina	Minimum	2.2%	0%	3.1%
	Maximum	50.0%	50.0%	62.5%
Vacant UAA Rate, South Carolina	Minimum	0%	0%	0%
	Maximum	10.0%	10.0%	17.8%
Other UAA Rate, South Carolina	Minimum	0.5%	0%	0.3%
	Maximum	50.0%	50.0%	62.5%

Table 2 and Appendix A demonstrate that dress rehearsal tracts had a wide variation with respect to UAA rate. UAA_{Other} rates contribute more to the variation than do UAA_{Vacant} rates. The phenomenon of variation in total UAA rates and how tract nonresponse rates were affected will be explored further in section 4.6.

4.3 Final Status of UAA housing units in dress rehearsal sites

In Sacramento 15,020 housing units were classified as being UAA via the initial mailing (6420 UAA vacant housing units and 8600 housing units classified UAA for other reasons). However, 5,021 of these (3451 classified vacant and 1570 classified UAA for other reasons) were sampled out during followup or did not have a computed final status. The remaining housing units are included in Table 3 below according to their final status as assigned by the Census Bureau.

Table 3. Sacramento UAA Housing Units According to Final Status

	Occupied	Vacant	Delete
UAA Vacant	847 out of 2969 (28.5%)	1549 out of 2969 (52.2%)	573 out of 2969 (19.3%)
UAA Other	1866 out of 7030 (26.5%)	1927 out of 7030 (27.4%)	3237 out of 7030 (46.0%)
Total UAA	2713 out of 9999 (27.1%)	3476 out of 9999 (34.8%)	3810 out of 9999 (38.1%)

The data that is of the most interest in Table 3 is contained in three cells. Of those housing units that were classified as being UAA_{Vacant} by the USPS, 52.2 percent of them had a final census status of vacant. Hence, that is the approximate success rate for the USPS when classifying vacant housing units in Sacramento. The housing units classified as UAA_{Other} by the USPS were deleted in 46.0 percent of the cases. This is the approximate success rate for the USPS when identifying housing units in Sacramento that were demolished, duplicates, etc. For all of the housing units classified as UAA in Sacramento by the USPS, 27.1 percent of them had a final status of occupied. This represents a rate of failure in contacting desired respondents since those housing units should have received a questionnaire according to census final status.

In South Carolina 26,234 housing units were classified as being UAA via the initial mailing (6,723 UAA vacant housing units and 19,511 housing units classified UAA for other reasons). However, 26 of these (six classified vacant and 20 classified UAA for other reasons) did not have a computed final status. The remaining housing units are included in Table 4 below according to their final status as assigned by the Census Bureau.

Table 4. South Carolina UAA Housing Units According to Final Status

	Occupied	Vacant	Delete
UAA Vacant	1361 out of 6717 (20.3%)	3664 out of 6717 (54.5%)	1692 out of 6717 (25.2%)
UAA Other	5372 out of 19491 (27.6%)	4578 out of 19491 (23.5%)	9541 out of 19491 (49.0%)
Total UAA	6733 out of 26,208 (25.7%)	8242 out of 26208 (31.4%)	11233 out of 26208 (42.9%)

As seen in Table 4, of those housing units that were classified as being UAA_{Vacant} by the USPS, 54.5 percent of them had a final census status of vacant. Hence, that is the approximate success rate for the USPS when classifying vacant housing units in South Carolina. The housing units classified as UAA_{Other} by the USPS were deleted in 49.0 percent of the cases. This is the approximate success rate for the USPS when identifying housing units in South Carolina that were demolished, duplicates, etc. For all of the housing units classified as UAA in South Carolina by the USPS, 25.7 percent of them had a final status of occupied. This represents a rate of failure in contacting desired respondents since those housing units should have received a questionnaire according to census final status.

Note that the rates of interest for successfully classifying housing units as UAA were quite consistent for the two sites.

4.4 Characteristics of Occupied UAA Housing Units in Dress Rehearsal Sites

In Sacramento 2,713 housing units that were classified as being UAA on the initial mailing were given a final status of occupied. Of these 847 were classified as UAA vacant and 1,866 were classified UAA for other reasons. Excluding the 124 housing units that were not included in the universe due to lack of a computed person count (47 UAA vacant housing units and 77 other UAA housing units), Table 5 provides tallies of these housing units according to tenure status. The tenure information for all of the

Sacramento housing units in the mailout/mailback universe that were not classified UAA via the initial mailing and had a final status of occupied is also included in this table. Of these 136,816 housing units, 1,379 housing units were excluded due to lack of a computed person count.

In South Carolina 6,733 housing units that were classified as being UAA on the initial mailing were given a final status of occupied. Of these 1,361 were classified as vacant and 5,372 were classified UAA for other reasons. Excluding the 353 housing units that were not included in the universe due to lack of a computed person count (107 UAA vacant housing units and 246 other UAA housing units), Table 5 provides tallies of these housing units according to tenure status. The tenure information for all of the South Carolina housing units in the mailout/mailback universe that were not classified UAA via the initial mailing and had a final status of occupied is also included in this table. Of these 181,001 housing units, 2,372 housing units were excluded due to lack of a computed person count.

Table 5. Occupied UAA Housing Units and Occupied Non-UAA Housing Units According to Tenure Status

		Occupant is the Owner (either by Mortgage or Free and Clear)	Occupant Does not Claim Ownership (Rents for Cash or Occupies without Payment of Cash Rent)
Sacramento	UAA Vacant	215 out of 800 (26.9%)	585 out of 800 (73.1%)
	UAA Other	389 out of 1789 (21.7%)	1400 out of 1789 (78.3%)
	Total UAA	604 out of 2589 (23.3%)	1985 out of 2589 (76.7%)
	Not UAA	69339 out of 135437 (51.2%)	66098 out of 135437 (48.8%)
South Carolina	UAA Vacant	436 out of 1254 (34.8%)	818 out of 1254 (65.2%)
	UAA Other	2890 out of 5126 (56.4%)	2236 out of 5126 (43.6%)
	Total UAA	3326 out of 6380 (52.1%)	3054 out of 6380 (47.9%)
	Not UAA	118587 out of 178629 (66.4%)	60042 out of 178629 (33.6%)

We conducted a chi-square test that compared the occupied housing units in Sacramento that were classified as UAA and those that were not classified UAA according to whether or not the occupant is the owner of the housing unit. Our null hypothesis was that UAA status and tenure status are statistically independent. The chi-square test rejected this hypothesis at the 99 percent significance level. There did appear to be some interaction between UAA status and tenure status in Sacramento. This test was also conducted for the South Carolina housing units, and again at the same significance level we concluded that there is some interaction between UAA status and tenure status. Note that in both sites the rate of ownership is less for UAA housing units than it is for housing units that were not classified as UAA. In Sacramento only 23.3 percent of the UAA housing units that had a final status of occupied were owned by the occupant, while 51.2 percent of the housing units that were not UAA were owned by the occupant. In South Carolina the rate of ownership for UAA occupied housing units was 52.1 percent, while the rate of ownership for housing units that were not classified UAA was 66.4 percent.

Table 6 includes counts again based on the 2713 occupied housing units in Sacramento which were classified UAA minus the 124 housing units that did not have a computed person count. Also included is the distribution of person counts for the occupied mailout/mailback housing units (136,816 occupied housing units minus 1,379 occupied housing units that did not have a computed person count) that were not classified as UAA via the initial mailing. These housing units are delineated according to the person count.

Table 6. Sacramento Occupied UAA Housing Units According to Person Count

	1 Person	2 People	3 People	4 People	5 People	6 or More People
UAA Vacant	327 out of 800 (40.9%)	198 out of 800 (24.8%)	120 out of 800 (15.0%)	73 out of 800 (9.1%)	44 out of 800 (5.5%)	38 out of 800 (4.8%)
UAA Other	896 out of 1789 (50.1%)	457 out of 1789 (25.5%)	180 out of 1789 (10.1%)	124 out of 1789 (6.9%)	68 out of 1789 (3.8%)	64 out of 1789 (3.6%)
Total UAA	1223 out of 2589 (47.2%)	655 out of 2589 (25.3%)	300 out of 2589 (11.6%)	197 out of 2589 (7.6%)	112 out of 2589 (4.3%)	102 out of 2589 (3.9%)
Not UAA	43952 out of 135437 (32.5%)	41457 out of 135437 (30.6%)	19233 out of 135437 (14.2%)	15028 out of 135437 (11.1%)	7946 out of 135437 (5.9%)	7821 out of 135437 (5.8%)

We conducted a chi-square test that compared the occupied housing units in Sacramento that were classified as UAA and those that were not classified UAA according to the number of occupants. The person count for this statistical test was divided according to the six categories in Table 6. Our null hypothesis was that UAA status and the person count are statistically independent. The chi-square test rejected this hypothesis at the 99 percent significance level. There did appear to be some interaction between UAA status and the number of persons occupying the housing unit in Sacramento. Note that the percentage of UAA occupied housing units corresponding to one person households (47.2 percent) was larger than the percentage for housing units that were not UAA (32.5 percent). Also, the percentage of the UAA occupied universe for each of the multiple person household categories was lower than it was for the occupied universe that was not classified UAA.

Table 7 includes counts again based on the 6,733 occupied housing units in South Carolina which were classified UAA minus the 353 housing units that did not have a computed person count. Also included is the distribution of person counts for the occupied mailout/mailback housing units (181,001 occupied housing units minus 2372 occupied housing units that did not have a computed person count) that were not classified as UAA via the initial mailing. These housing units are delineated according to the person count.

Table 7. South Carolina Occupied UAA Housing Units According to Person Count

	1 Person	2 People	3 People	4 People	5 People	6 or More People
UAA Vacant	541 out of 1254 (43.1%)	349 out of 1254 (27.8%)	181 out of 1254 (14.4%)	111 out of 1254 (8.9%)	52 out of 1254 (4.1%)	20 out of 1254 (1.6%)
UAA Other	1836 out of 5126 (35.8%)	1623 out of 5126 (31.7%)	810 out of 5126 (15.8%)	488 out of 5126 (9.5%)	229 out of 5126 (4.5%)	140 out of 5126 (2.7%)
Total UAA	2377 out of 6380 (37.3%)	1972 out of 6380 (30.9%)	991 out of 6380 (15.5%)	599 out of 6380 (9.4%)	281 out of 6380 (4.4%)	160 out of 6380 (2.5%)
Not UAA	48881 out of 178629 (27.4%)	58535 out of 178629 (32.8%)	32075 out of 178629 (18.0%)	24045 out of 178629 (13.5%)	9922 out of 178629 (5.6%)	5171 out of 178629 (2.9%)

We conducted a chi-square test that compared the occupied housing units in South Carolina that were classified as UAA and those that were not classified UAA according to the number of occupants. The person count for this statistical test was divided according to the six categories in Table 7. Our null hypothesis was that UAA status and the person count are statistically independent. The chi-square test rejected this hypothesis at the 99 percent significance level. There did appear to be some interaction between UAA status and the number of persons occupying the housing unit in South Carolina. Note that the percentage of UAA occupied housing units corresponding to one person households (37.3 percent) was larger than the same percentage for housing units that were not UAA (27.4 percent). Also, the percentage of the UAA occupied universe for each of the multiple person household categories was lower than the same percentage for the occupied universe that was not classified UAA.

Table 8 includes counts based on the person data for the householders associated with the 2713 occupied housing units in Sacramento which were classified UAA by the initial mailing and the 136,816 occupied housing units that were not classified UAA by the initial mailing. Again, 124 and 1379 of the housing units from these universes, respectively, did not have the desired data. These counts describe the Hispanic origin data for the householders. This Hispanic origin data was obtained from the CEF.

Table 8. Hispanic Origin Data from Occupied Housing Units in Sacramento

Householder's Hispanic Origin	UAA Housing Units	Not UAA Housing Units
Not Spanish/Hispanic	2111 out of 2589 (81.5%)	114929 out of 135437 (84.9%)
Spaniard	1 out of 2589 (0.04%)	87 out of 135437 (0.06%)
Mexican	374 out of 2589 (14.4%)	16050 out of 135437 (11.9%)
Central American	4 out of 2589 (0.2%)	443 out of 135437 (0.3%)
South American	4 out of 2589 (0.2%)	199 out of 135437 (0.1%)
Latin American	3 out of 2589 (0.1%)	245 out of 135437 (0.2%)
Puerto Rican	15 out of 2589 (0.6%)	703 out of 135437 (0.5%)
Cuban	15 out of 2589 (0.6%)	230 out of 135437 (0.2%)
Dominican	0 out of 2589 (0%)	9 out of 135437 (0.007%)
Other Spanish/Hispanic	62 out of 2589 (2.4%)	2542 out of 135437 (1.9%)

We conducted a chi-square test that compared the occupied housing units in Sacramento that were classified as UAA and those that were not classified UAA according to the Hispanic origin of the householder. Hispanic origin for this statistical test was divided according to the ten categories in Table 8. Our null hypothesis was that UAA status and the Hispanic origin of the householder are statistically independent. The chi-square test rejected this hypothesis at the 99 percent significance level. There did appear to be some interaction between UAA status and the Hispanic origin of the householder in Sacramento. Note the disparities between the percentages of the UAA and not UAA occupied universes for the two largest Hispanic origin categories, not Spanish or Hispanic and Mexican. Those householders that were not Spanish or Hispanic accounted for 81.5 percent of the UAA occupied universe, but they accounted for 84.9 percent of the occupied universe that was not classified UAA. Mexican householders accounted for 14.4 percent of the UAA occupied universe, but they accounted for only 11.9 percent of the occupied universe that was not classified UAA.

Table 9 includes counts based on the person data for the householders associated with the 6729 occupied housing units in South Carolina which were classified UAA by the initial mailing and the 180,984 occupied housing units that were not classified UAA by the initial mailing. From these universes 353 housing units and 2370 housing units, respectively, are excluded due to lack of Hispanic origin data on the CEF. (The slight inconsistency between these housing unit counts and the earlier counts could be due to inconsistent repetition of ID numbers between the Mail Return Check-In File and the CEF.)

Table 9. Hispanic Origin Data from Occupied Housing Units in South Carolina

Householder's Hispanic Origin	UAA Housing Units	Not UAA Housing Units
Not Spanish/Hispanic	6230 out of 6376 (97.7%)	175516 out of 178614 (98.3%)
Spaniard	0 out of 6376 (0%)	22 out of 178614 (0.01%)
Mexican	84 out of 6376 (1.3%)	1263 out of 178614 (0.7%)
Central American	4 out of 6376 (0.06%)	140 out of 178614 (0.08%)
South American	4 out of 6376 (0.06%)	122 out of 178614 (0.07%)
Latin American	0 out of 6376 (0%)	32 out of 178614 (0.02%)
Puerto Rican	19 out of 6376 (0.3%)	758 out of 178614 (0.4%)
Cuban	7 out of 6376 (0.1%)	171 out of 178614 (0.1%)
Dominican	2 out of 6376 (0.03%)	18 out of 178614 (0.1%)
Other Spanish/Hispanic	26 out of 6376 (0.4%)	572 out of 178614 (0.3%)

We conducted a chi-square test that compared the occupied housing units in South Carolina that were classified as UAA and those that were not classified UAA according to the Hispanic origin of the householder. Hispanic origin for this statistical test was divided according to the ten categories in Table 9. Our null hypothesis was that UAA status and the Hispanic origin of the householder are statistically independent. The chi-square test rejected this hypothesis at the 99 percent significance level. There did appear to be some interaction between UAA status and the Hispanic origin of the householder in South Carolina. Note the disparities between the percentages of the UAA and not UAA occupied universes for the two largest Hispanic origin categories, not Spanish or Hispanic and Mexican. Those householders that were not Spanish or Hispanic accounted for 97.7 percent of the UAA occupied universe, but they accounted for 98.3 percent of the occupied universe that was not classified UAA. Mexican householders accounted for 1.3 percent of the UAA occupied universe, but they accounted for only 0.7 percent of the occupied universe that was not classified UAA.

Table 10 includes counts based on the person data for the householders associated with the 2713 occupied housing units in Sacramento which were classified UAA by the initial mailing and the 136,816 occupied housing units that were not classified UAA by the initial mailing. Again, 124 and 1379 of the housing units from these universes, respectively, did not have the desired data. These counts describe race data for the householders. The race data was obtained from the CEF.

Table 10. Race Data from Occupied Housing Units in Sacramento

Householder's Race	UAA Housing Units	Not UAA Housing Units
White	1397 out of 2589 (54.0%)	80324 out of 135437 (59.3%)
Black or African-American	463 out of 2589 (17.9%)	18768 out of 135437 (13.9%)
American Indian or Alaska Native	55 out of 2589 (2.1%)	2449 out of 135437 (1.8%)
Asian	213 out of 2589 (8.2%)	16051 out of 135437 (11.9%)
Native Hawaiian or Other Pacific Islander	10 out of 2589 (0.4%)	551 out of 135437 (0.4%)
Some Other Race	315 out of 2589 (12.2%)	10724 out of 135437 (7.9%)
Multiracial	136 out of 2589 (5.3%)	6570 out of 135437 (4.9%)

We conducted a chi-square test that compared the occupied housing units in Sacramento that were classified as UAA and those that were not classified UAA according to the race of the householder. Race for this statistical test was divided according to the seven categories in Table 10. Our null hypothesis was that UAA status and the race of the householder are statistically independent. The chi-square test rejected this hypothesis at the 99 percent significance level. There did appear to be some interaction between UAA status and the race of the householder in Sacramento. The most striking disparities in percentages of householder race for occupied housing units according to UAA status correspond to the white, black or African-American, Asian, and some other race categories.

Table 11 includes counts based on the person data for the householders associated with the 6729 occupied housing units in South Carolina which were classified UAA by the initial mailing and the 180,984 occupied housing units that were not classified UAA by the initial mailing. From these universes 353 housing units and 2370 housing units, respectively, are excluded due to lack of race data on the CEF. (Again, the slight inconsistency between these housing unit counts and the earlier counts could be due to inconsistent repetition of ID numbers between the Mail Return Check-In File and the CEF.)

Table 11. Race Data from Occupied Housing Units in South Carolina

Householder's Race	UAA Housing Units	Not UAA Housing Units
White	3385 out of 6376 (53.1%)	110079 out of 178614 (61.6%)
Black or African-American	2770 out of 6376 (43.4%)	63580 out of 178614 (35.6%)
American Indian or Alaska Native	30 out of 6376 (0.5%)	654 out of 178614 (0.4%)
Asian	71 out of 6376 (1.1%)	1663 out of 178614 (0.9%)
Native Hawaiian or Other Pacific Islander	6 out of 6376 (0.09%)	127 out of 178614 (0.07%)
Some Other Race	62 out of 6376 (1.0%)	849 out of 178614 (0.5%)
Multiracial	52 out of 6376 (0.8%)	1662 out of 178614 (0.9%)

We conducted a chi-square test that compared the occupied housing units in South Carolina that were classified as UAA and those that were not classified UAA according to the race of the householder. Race for this statistical test was divided according to the seven categories in Table 11. Our null hypothesis was that UAA status and the race of the householder are statistically independent. The chi-square test rejected this hypothesis at the 99 percent significance level. There did appear to be some interaction between UAA status and the race of the householder in South Carolina. One noteworthy difference is that 53.1 percent of UAA occupied housing unit householders were white while 61.6 percent of householders from occupied housing units that were not classified UAA were white. Also, the percentage of black or African-American householders is 43.4 percent for the UAA occupied universe but only 35.6 percent for the occupied housing units that were not UAA.

4.5 Consistency in UAA Classification for the Initial and Replacement Mailings

For the purposes of this analysis, we shall classify a discrepancy in UAA status between the two mailings as an error if one mailing receives a UAA_{Other} classification and the other mailing either is not returned as a UAA or is returned as a UAA_{Vacant}. We consider this situation an error since UAA_{Other} usually refers to a housing unit that should be deleted.

A difference in UAA status between the two mailings could reflect an error by the USPS, but it also could reflect a true change in occupancy status for a housing unit. For this analysis we shall classify a discrepancy in UAA status between the two mailings as a true change in occupancy status if one mailing is not returned as UAA and the other is returned as a UAA_{Vacant}. Initial questionnaires were delivered between March 28 and March 31, while replacement questionnaires were delivered between April 15 and April 17. Consequently, it is possible that an occupied housing unit at the time of initial questionnaire delivery was a vacant housing unit at the time of replacement questionnaire delivery. The converse is possible as well, and these two situations describe a true change in occupancy that could have produced conflicting UAA information for the two deliveries.

If the UAA status for the two mailings is the same, we classify the situation as consistent.

Table 12 summarizes these three categorizations.

Table 12. Summary of Initial and Replacement Mailing UAA Status Discrepancy Categories

	Replacement Mailing Not UAA	Replacement Mailing Vacant UAA	Replacement Mailing Other UAA
Initial Mailing Not UAA	Consistent	True Change in Occupancy	Error
Initial Mailing Vacant UAA	True Change in Occupancy	Consistent	Error
Initial Mailing Other UAA	Error	Error	Consistent

Of course, there are limitations in these categorizations, but these should have been relatively rare occurrences. For example, if destruction or construction of a given housing unit was completed between the time of the two mailings, then the USPS might have correctly classified the UAA status in a case that this study considers an error. Another example is the case in which the USPS incorrectly classified a given housing unit as vacant or occupied for one mailing and the status for the other mailing implies a true change in status. Even in the cases for which UAA status is consistent, errors by the USPS are possible, as evidenced by Tables 3 and 4 above.

Table 13 provides a cross of UAA status of the initial and replacement mailings for the housing units in Sacramento. Additionally, included within each cell is the percentage of the mailout universe (173,483 housing units), the number of respondents for that cell, and a response rate for that cell based on the number of respondents in the cell over the total number of housing units in the cell.

Table 13. Initial and Replacement Mailing UAA Status for Sacramento Housing Units with Percentage of Mailout Universe and Associated Response Rate

	Replacement Mailing Not UAA	Replacement Mailing Vacant UAA	Replacement Mailing Other UAA
Initial Mailing Not UAA	154401 (89.0%); 90811 respondents (58.8%)	1432 (0.8%); 245 respondents (17.1%)	2173 (1.3%); 470 respondents (21.6%)
Initial Mailing Vacant UAA	2459 (1.4%); 243 respondents (9.9%)	2721 (1.6%); 0 respondents	1483 (0.9%); 0 respondents
Initial Mailing Other UAA	3193 (1.8%); 214 respondents (6.7%)	923 (0.5%); 0 respondents	4698 (2.7%); 0 respondents

In Sacramento 93.3 percent of the housing units in the mailout universe had consistent UAA classification across the initial and replacement mailings. It follows that 6.7 percent of the housing units had inconsistent UAA information between the two mailings. Of the 19,082 housing units that had at least one corresponding UAA return, 38.9 percent had the same UAA designation for both the initial and replacement mailings.

Table 14 provides a cross of UAA status of the initial and replacement mailings for the housing units in South Carolina. Additionally, included within each cell is the percentage of the mailout universe (224,009 housing units), the number of respondents for that cell, and a response rate for that cell based on the number of respondents in the cell over the total number of housing units in the cell.

Table 14. Initial and Replacement Mailing UAA Status for South Carolina Housing Units with Percentage of Mailout Universe and Associated Response Rate

	Replacement Mailing Not UAA	Replacement Mailing Vacant UAA	Replacement Mailing Other UAA
Initial Mailing Not UAA	191835 (85.6%); 121579 respondents (63.4%)	1497 (0.7%); 171 respondents (11.4%)	3882 (1.7%); 830 respondents (21.4%)
Initial Mailing Vacant UAA	2754 (1.2%); 185 respondents (6.7%)	2631 (1.2%); 0 respondents	1523 (0.7%); 0 respondents
Initial Mailing Other UAA	5281 (2.4%); 376 respondents (7.1%)	1432 (0.6%); 0 respondents	13174 (5.9%); 0 respondents

In South Carolina 92.7 percent of the housing units in the mailout universe had consistent UAA classification across the initial and replacement mailings. It follows that 7.3 percent of the housing units had inconsistent UAA information between the two mailings. Of the 32,174 housing units that had at least one corresponding UAA return, 49.1 percent had the same UAA designation for both the initial and replacement mailings.

Table 15 utilizes the data from Tables 13 and 14 but focuses on the discrepancies in UAA classification for Sacramento and South Carolina according to whether we view the difference as a possible error or as a true change in status. All of the housing units from Tables 13 and 14 are included in Table 15.

Table 15. Discrepancies in UAA Status According to Probable Error or True Change in Status

	Error in Classification	True Change in Occupancy	Same UAA Classification
Sacramento	7772 out of 173483 (4.5%)	3891 out of 173483 (2.2%)	161820 out of 173483 (93.3%)
South Carolina	12118 out of 224009 (5.4%)	4251 out of 224009 (1.9%)	207640 out of 224009 (92.7%)

As previously described, we classify a discrepancy in UAA status between the two mailings as an error if one mailing receives a UAA_{Other} classification and the other mailing either is not returned as a UAA or is returned as a UAA_{Vacant}. The USPS seemed to err in consistent classification between the two mailings for approximately 4.5 percent of the mailout/mailback housing units in Sacramento and approximately 5.4 percent of the mailout/mailback housing units in South Carolina. Also described previously, we treat the cases in which one mailing was designated vacant by the USPS and the other mailing was not designated UAA by the USPS as a true change in occupancy. Note that this inconsistency in housing unit occupancy status occurred for approximately 2.2 percent of the mailout/mailback housing units in Sacramento and approximately 1.9 percent of the mailout/mailback housing units in South Carolina.

Limiting the universe of study to only housing units that had at least one questionnaire designated UAA more effectively highlights one difference between the Sacramento and South Carolina sites. This equates to restricting the universes of Tables 13 and 14 to all cells except for the top left one. Of the 19,082 housing units in Sacramento that had at least one questionnaire designated UAA, 20.4 percent had differing UAA annotation between the two mailings that indicated a true change in occupancy. Of the 32,174 housing units in South Carolina that had at least one questionnaire designated UAA, 13.2 percent had differing UAA annotation between the two mailings that indicated a true change in occupancy. In Table 15 these housing units fall under the “True Change in Occupancy” column, but the difference (2.2 percent as opposed to 1.9 percent) is not as pronounced when the entire mailout/mailback universe is used as a reference. This contrast might be due to a higher incidence of movers in the Sacramento mailout/mailback universe.

4.6 Nonresponse as Affected by UAA Rates

Graphs 1 and 2 in Appendix B illustrate tract response rates, UAA rates, and the remaining nonresponse rates for Sacramento and South Carolina, respectively. As described above, housing units that are not counted toward the response rate or the UAA rate are counted toward the nonresponse rate. For these graphs, a housing unit was counted toward the UAA rate if both mailings were returned by the USPS as undeliverable. The tracts are presented in ascending order according to response rate.

For each tract, the black point represents the response rate, the gray point designates the sum of the response rate and UAA rate, and the white space above the gray point represents the nonresponse rate. Summed together, these three rates correspond to 100 percent of the mailout/mailback universe within each tract.

Graphs 1 and 2 demonstrate that in general for both Sacramento and South Carolina, tracts with higher undeliverability rates tended to be the tracts with the lower response rates. Thus, if we were to remove undeliverability from our consideration of response rates, tract nonresponse rates across each site would exhibit less variation. Further study might prove enlightening with respect to the tracts with especially high UAA rates.

Section 5. Conclusions/Recommendations

5.1 What were the overall dress rehearsal UAA rates for the Sacramento site and the mailout/mailback portion of the South Carolina site?

There were a few methods for defining UAA rate in the dress rehearsal. Based solely on the initial mailing the total UAA rate for Sacramento was approximately 8.7 percent with a UAA_{vacant} rate of approximately 3.7 percentage points and a UAA_{Other} rate of approximately 5.0 percentage points. For South Carolina the total UAA rate was

approximately 11.7 percent with a UAA_{vacant} rate of approximately 3.0 percentage points and a UAA_{Other} rate of approximately 8.7 percentage points. Based on those UAA_{Other} rates, it might follow that the quality of the address list in South Carolina was lower than it was in Sacramento. It could also imply that South Carolina had more addresses that the USPS did not recognize as deliverable.

5.2 What were the dress rehearsal UAA rates according to census tract within each site?

As mentioned previously, tract UAA rates are documented in Appendix A. Tract total UAA rates according to the initial mailing varied from 0 percent to 43.7 percent in Sacramento and from 2.2 percent to 50.0 percent in South Carolina. UAA_{vacant} tract rates ranged from 0 percent to 14.7 percent in Sacramento and from 0 percent to 10.0 percent in South Carolina. UAA_{Other} tract rates ranged from 0 percent to 42.0 percent in Sacramento and from 0.5 percent to 50.0 percent in South Carolina. In general UAA_{Other} rates exhibited more variation and accounted for more of the total UAA universe than the UAA_{vacant} rates in both sites. Further study into the nature of specific tracts with high undeliverability rates might prove useful.

5.3 What was the breakdown of housing units in the UAA universes according to final status (occupied, vacant, delete) as designated on the Census Edited File (CEF)?

Of those housing units that were classified as being UAA_{vacant} by the USPS, 52.2 percent in Sacramento and 54.5 percent in South Carolina had a final census status of vacant. The housing units classified as UAA_{Other} by the USPS were deleted in 46.0 percent of the Sacramento cases and 49.0 percent of the South Carolina cases. These rates represent the success of the USPS in identifying UAA cases. For all of the housing units classified as UAA by the USPS, 27.1 percent of the Sacramento housing units and 25.7 percent of the South Carolina housing units had a final status of occupied. This represents a rate of failure in contacting desired respondents since those housing units should have received a questionnaire according to census final status. The rates of interest for successfully classifying housing units as UAA seemed relatively consistent for the two sites.

5.4 For those housing units designated UAA that had a final status of occupied, what were the characteristics of these households with regard to tenure, number of household members, Hispanic origin of the householder, and race of the householder?

At the 99 percent significance level, we conclude that there was some interaction between UAA status and tenure status in Sacramento and South Carolina. The data indicate that a housing unit classified as UAA was less likely to be owned by the occupant than a housing unit that was not classified as UAA.

At the 99 percent significance level, there did appear to be some interaction between UAA status and the number of persons occupying the housing unit in Sacramento and South Carolina. The percentage of UAA occupied housing units corresponding to one person households was larger than the same percentage for occupied housing units that were not UAA. Also, the percentage of the UAA occupied universe corresponding to each of the multiple person household categories was lower than the same percentage for the occupied universe that was not classified UAA.

At the 99 percent significance level, there did appear to be some interaction between UAA status and the Hispanic origin of the householder in Sacramento and South Carolina. Especially notable were the disparities between the percentages of the UAA and not UAA occupied universes for the two largest Hispanic origin categories, not Spanish or Hispanic and Mexican. The percentage of UAA occupied housing units with a householder who was not Spanish or Hispanic was lower than the same percentage for occupied housing units that were not UAA. The percentage of UAA occupied housing units with a Mexican householder was higher than the same percentage for the occupied housing units that were not UAA.

At the 99 percent significance level, there did appear to be some interaction between UAA status and the race of the householder in Sacramento and South Carolina. The most striking disparities in percentages of householder race for occupied housing units in Sacramento according to UAA status correspond to the white, black or African-American, Asian, and some other race categories. In those cases undeliverability was more likely for black or African-American householders and the householders in the some other race category. Undeliverability was less likely for white and Asian householders. In South Carolina differences between white and black or African-American householders were noteworthy. Undeliverability was more likely for the black or African-American householders and less likely for the white householders.

Based on these results, undeliverability does create a bias in terms of who is successfully contacted via the mailout operation according to the stated occupant categories.

5.5 What was the rate of agreement between the UAA classifications for the initial and replacement mailings?

Of the housing units in the mailout universe, 93.3 percent in Sacramento and 92.7 percent in South Carolina had consistent UAA classification. However, if we restrict the mailout universe to only those housing units that had at least one corresponding UAA return, 38.9 percent in Sacramento and 49.1 percent in South Carolina had the same UAA designation. Inconsistency could be due to an error in classification by the USPS or a true change in occupancy status between the two mailings.

Inconsistent classification between the two mailings indicating an error (one questionnaire designated UAA_{Other} and the other designated UAA_{Vacant} or not a UAA) occurred for approximately 4.5 percent of the mailout/mailback universe in Sacramento and approximately 5.4 percent of the mailout/mailback universe in South Carolina. Inconsistent classification between the two mailings indicating a true change in occupancy (one mailing was designated vacant by the USPS and the other mailing was not designated UAA by the USPS) occurred for approximately 2.2 percent of the mailout/mailback universe in Sacramento and approximately 1.9 percent of the mailout/mailback universe in South Carolina.

Of the housing units in Sacramento with at least one questionnaire designated UAA, 20.4 percent implied a true change in occupancy due to differences between the two mailings. Of the housing units in South Carolina with at least one questionnaire designated UAA, 13.2 percent implied a true change in occupancy due to differences between the two mailings. We conclude that Sacramento had a higher incidence of movers than South Carolina.

While the blanket replacement mailing provided an extra opportunity for response, it also created the opportunity for inconsistency in UAA annotation. However, this inconsistency is not necessarily damaging to our study. The extra information was used to categorize different measures of undeliverability, as this report clearly shows. The extra mailing provided us with another means for identifying USPS error aside from simply using final status. It also served as a vehicle for identifying housing units that experienced true changes in occupancy status at a time close to Census Day. Finally, the blanket replacement mailing provided an opportunity to increase the mail response rate (see Reference 1/).

5.6 How did nonresponse rates vary according to tract when taking UAA rates into consideration?

There is no debating that undeliverability rate has an effect on the response rate. In some dress rehearsal tracts the influence of undeliverability was greater than it was for other tracts. In general for both Sacramento and South Carolina, tracts with higher undeliverability rates tended to be the tracts with the lower response rates. Thus, if we were to remove undeliverability from our consideration of response rates, tract nonresponse rates across each site would exhibit less variation. Further study might prove enlightening with respect to the tracts with especially high UAA rates.

Section 6. References

- 1/ Dimitri, C. Robert. "Mail Implementation Strategy." Census 2000 Dress Rehearsal Evaluation Memorandum A1a, Dated June 1999.
- 2/ From Howard R. Hogan. "Revision: Documentation of Response and Return Rates for the 2000 Dress Rehearsal and Census 2000." Census 2000 Decision Memorandum No. 65, Dated December 2, 1998.
- 3/ Treat, James B. "Results from the Postmaster Return Questionnaire Delivery Project: Stage II Evaluation." DSSD 1990 REX Memorandum Series #K-16, Dated July 13, 1992.

Dress Rehearsal UAA Rates by Tract

Table 16. Sacramento UAA Rates by Tract

Tract Number	Number of Housing Units	UAA Rate for Initial Mailing	UAA-Vacant Rate for Initial Mailing	UAA Rate for Both Mailings	UAA-Vacant Rate for Both Mailings	UAA Rate for Either Mailing	UAA-Vacant Rate for Either Mailing
000100	1735	2.3	1.0	1.6	0.9	3.0	1.8
000200	1837	2.2	1.0	1.5	0.8	3.8	2.6
000300	1617	4.5	1.1	2.7	0.9	5.4	2.4
000400	2446	5.8	1.9	3.4	1.1	8.1	3.3
000500	2490	18.2	4.6	11.8	3.1	22.2	5.0
000600	575	12.7	3.1	7.8	2.1	14.6	3.5
000700	658	29.0	2.6	27.4	2.3	29.9	4.1
000800	1244	6.8	2.3	4.6	1.4	9.1	3.7
000900	201	8.5	4.5	6.5	4.0	9.5	5.5
001000	678	10.6	2.7	9.4	2.4	24.5	3.2
001100	876	18.3	4.1	14.2	3.1	26.3	4.9
001200	2571	12.1	3.1	8.1	1.8	13.9	4.2
001300	2518	10.9	2.0	5.6	1.4	17.7	4.1
001400	1953	8.8	1.6	5.4	0.9	10.8	5.3
001500	2536	6.8	1.3	4.1	0.9	7.9	3.1
001600	2685	7.5	1.8	2.6	1.2	8.7	3.6
001700	2537	8.0	2.5	4.9	1.3	8.8	3.0
001800	2394	11.8	3.3	9.1	2.7	16.3	3.8
001900	1826	9.0	5.0	6.2	3.8	11.7	7.3
002000	1493	10.2	3.7	5.8	2.5	11.6	5.9
002100	1270	15.8	3.6	7.9	2.2	18.0	8.3
002200	1783	5.6	1.5	4.5	1.2	6.5	4.0
002300	1698	3.1	2.1	2.5	1.6	4.2	3.4
002400	2150	4.3	1.7	3.4	1.5	4.9	3.8
002500	738	3.5	1.1	1.9	0.4	4.3	2.8

Table 16. Sacramento UAA Rates by Tract (continued)

Tract Number	Number of Housing Units	UAA Rate for Initial Mailing	UAA-Vacant Rate for Initial Mailing	UAA Rate for Both Mailings	UAA-Vacant Rate for Both Mailings	UAA Rate for Either Mailing	UAA-Vacant Rate for Either Mailing
002600	1318	5.5	2.8	3.6	1.9	8.0	5.5
002700	1729	13.4	7.7	9.0	4.5	15.0	8.4
002800	1157	15.6	9.9	11.8	8.0	18.8	10.6
002900	2403	6.8	5.6	3.8	3.3	7.9	6.6
003000	2870	7.0	4.7	3.4	2.9	7.9	5.9
003101	1272	5.2	4.7	3.4	3.1	5.7	5.4
003102	1305	11.3	10.7	6.7	6.4	14.3	13.6
003201	2124	6.3	4.8	3.3	2.9	7.3	5.8
003202	1863	8.4	6.7	5.2	4.3	10.0	7.6
003300	1946	2.7	1.7	1.9	1.3	3.1	2.2
003400	1860	7.3	5.0	2.5	2.3	7.8	5.2
003501	1305	8.1	4.1	5.9	2.8	12.0	5.2
003502	1330	3.3	2.3	2.4	1.5	4.4	3.7
003600	1055	8.4	6.0	4.4	3.4	10.5	8.4
003700	1387	15.1	11.5	9.7	7.4	17.2	13.0
003800	1747	4.9	3.7	3.3	2.6	5.4	4.5
003900	1693	4.8	3.1	2.7	1.8	5.3	3.5
004001	2847	3.7	2.4	2.5	1.7	4.5	3.1
004004	2665	2.3	1.7	1.4	1.1	3.0	2.1
004005	1995	4.1	2.7	1.9	1.3	4.5	3.3
004006	2244	3.9	3.5	1.6	1.5	4.5	3.9
004007	6567	5.1	4.1	2.9	2.3	6.2	4.9
004008	1477	2.1	1.7	1.4	1.1	2.4	2.1
004100	1641	6.5	5.1	4.0	3.4	7.6	6.5
004201	1715	4.1	2.4	2.6	1.6	4.8	3.5
004202	1621	7.1	4.9	5.4	3.7	8.2	7.1
004203	1336	7.8	6.8	5.2	4.5	8.8	7.8
004300	1696	4.9	4.4	3.3	3.1	6.4	5.8

Table 16. Sacramento UAA Rates by Tract (continued)

Tract Number	Number of Housing Units	UAA Rate for Initial Mailing	UAA-Vacant Rate for Initial Mailing	UAA Rate for Both Mailings	UAA-Vacant Rate for Both Mailings	UAA Rate for Either Mailing	UAA-Vacant Rate for Either Mailing
004401	1071	13.4	12.5	5.5	5.3	14.0	13.2
004402	666	9.5	8.4	5.7	5.4	10.8	9.6
004500	1344	11.8	9.4	7.2	6.3	13.1	10.9
004601	1212	11.2	7.9	6.7	4.6	13.8	11.1
004700	429	16.6	14.7	12.6	11.4	18.9	16.6
004801	1478	5.1	2.4	2.6	1.6	6.0	3.1
004802	146	0.7	0	0.7	0	1.4	0.7
004903	2165	15.1	14.6	11.2	10.9	17.0	16.2
004904	522	1.7	1.3	0.6	0.6	2.7	2.1
004905	2382	5.2	4.5	2.9	2.4	6.0	6.6
004906	730	11.8	11.4	8.2	7.9	12.1	11.5
005002	524	18.5	12.0	14.7	9.5	19.1	17.2
005103	556	7.0	5.2	5.2	4.0	8.5	5.6
005201	981	4.1	2.2	2.5	1.7	7.1	4.6
005202	1474	4.6	4.3	2.9	2.7	5.3	4.9
005203	3269	3.1	2.1	2.0	1.3	3.9	2.6
005300	1621	22.6	0.4	0.9	0.1	23.0	0.6
005402	2019	27.1	7.1	22.4	4.0	30.0	10.3
005403	1353	5.8	2.9	2.1	1.4	6.9	4.3
005404	1655	8.3	0.9	3.2	0.5	9.5	3.4
005502	1797	43.7	1.7	41.7	1.3	45.7	3.1
005503	1	0	0	0	0	0	0
005504	711	10.3	3.9	3.9	1.8	18.6	5.8
006201	254	16.5	3.9	10.2	2.8	21.3	6.3
006202	1311	10.8	6.3	8.2	4.4	12.8	8.2
006300	1846	11.2	4.0	9.0	3.1	12.5	4.6
006400	1786	10.9	2.5	9.1	2.3	12.8	3.1
006500	2052	17.9	4.6	15.0	4.0	19.1	5.3

Table 16. Sacramento UAA Rates by Tract (continued)

Tract Number	Number of Housing Units	UAA Rate for Initial Mailing	UAA-Vacant Rate for Initial Mailing	UAA Rate for Both Mailings	UAA-Vacant Rate for Both Mailings	UAA Rate for Either Mailing	UAA-Vacant Rate for Either Mailing
006600	2379	14.3	2.4	9.5	1.6	17.3	5.3
006701	2315	5.8	1.4	4.4	0.9	6.8	1.8
006702	1987	14.0	4.4	11.4	3.5	15.3	5.0
006800	2420	12.3	2.2	8.4	1.5	15.2	5.3
006900	2985	20.7	2.9	9.3	2.2	22.9	4.2
007001	1531	9.5	3.3	6.7	2.0	13.5	4.3
007003	3781	10.1	2.6	7.8	2.0	12.6	3.5
007004	1433	7.3	1.9	5.0	1.1	9.6	2.4
007005	3919	5.0	1.9	3.2	1.4	6.5	2.8
007006	4061	4.3	1.2	2.4	0.8	5.6	2.2
007007	1225	9.1	3.1	8.4	2.6	11.0	4.8
007100	170	14.7	4.7	13.5	4.1	15.3	5.3
007202	55	7.3	1.8	7.3	1.8	7.3	1.8
007204	1566	6.0	1.5	4.6	1.5	6.6	2.4
007300	220	11.4	7.3	9.5	5.9	12.7	7.7
007413	3	0	0	0	0	0	0
007502	206	25.2	2.9	24.8	2.9	26.7	3.4
009200	67	4.5	0	4.5	0	4.5	0
009601	1770	3.3	2.5	1.9	1.4	3.7	2.9
009602	4873	5.2	4.7	2.8	2.5	6.4	5.3
009603	4462	3.5	2.8	2.3	1.9	4.2	3.3
009605	23	8.7	8.7	4.3	4.3	8.7	8.7

Table 17. South Carolina Mailout/Mailback UAA Rates by Tract

Tract Number	Number of Housing Units	UAA Rate for Initial Mailing	UAA-Vacant Rate for Initial Mailing	UAA Rate for Both Mailings	UAA-Vacant Rate for Both Mailings	UAA Rate for Either Mailing	UAA-Vacant Rate for Either Mailing
023020100	1136	3.1	1.8	0	0	3.1	1.8
023020200	1660	4.9	3.0	0.7	0.1	5.4	3.2
023020300	1257	5.9	1.0	0.2	0.1	6.0	1.2
023020600	404	3.7	0.2	0	0	3.7	0.2
023021000	811	18.2	0.3	15.3	4.9	21.3	10.9
025950100	701	37.4	3.6	32.2	2.4	39.8	5.3
025950400	394	25.4	1.8	21.3	1.8	28.2	1.8
025950500	1333	8.6	1.8	6.2	1.1	10.7	4.1
025950600	1084	15.3	6.0	12.0	4.2	19.1	10.8
031010200	403	8.4	0.2	4.7	0	9.2	1.0
031010300	1595	15.7	1.3	11.7	1.0	21.9	2.9
031010400	1006	10.4	2.0	7.6	1.2	11.7	2.6
031010500	1430	13.6	6.4	9.9	4.5	15.7	8.0
031010600	1313	16.1	5.1	12.5	3.4	18.4	7.9
031010700	1608	22.6	8.6	15.7	6.8	26.2	11.1
031010800	321	9.3	0.9	7.5	0.6	11.8	1.6
031010900	377	20.7	0.3	18.3	0.3	22.8	0.3
031011000	1375	36.1	0.9	23.9	0.7	38.5	1.2
031011100	1448	38.3	2.2	31.1	1.7	41.7	3.9
031011200	2103	37.0	1.2	29.7	1.1	39.7	2.5
031011300	960	18.3	4.6	16.1	2.9	19.9	6.0
031011400	2809	38.5	1.6	32.5	1.1	41.6	2.3
039960400	1529	19.0	2.9	14.3	1.8	21.6	5.4
039960500	10	20.0	10.0	10.0	10.0	30.0	10.0
055970100	570	20.2	2.3	16.1	1.4	26.1	3.3
055970200	1076	10.0	1.4	8.6	1.0	12.0	1.6
055970300	575	16.7	0.5	16.0	0.5	20.9	0.5
055970400	3025	11.8	2.4	10.8	2.0	14.9	3.2

Table 17. South Carolina Mailout/Mailback UAA Rates by Tract (continued)

Tract Number	Number of Housing Units	UAA Rate for Initial Mailing	UAA-Vacant Rate for Initial Mailing	UAA Rate for Both Mailings	UAA-Vacant Rate for Both Mailings	UAA Rate for Either Mailing	UAA-Vacant Rate for Either Mailing
055970500	3233	11.7	5.7	8.9	3.3	13.5	6.4
055970600	3244	10.8	3.3	8.9	2.1	13.8	4.7
055970700	1103	12.7	4.4	9.8	3.2	16.3	5.2
055970800	2960	12.8	7.4	8.8	4.5	16.0	9.5
055970900	3955	9.9	1.4	8.7	1.0	11.8	2.1
057010100	1223	9.3	1.0	5.3	0	10.6	1.0
057010200	2883	20.9	2.4	15.6	1.5	22.4	2.7
057010300	1677	8.3	1.4	5.2	1.0	9.8	2.3
057010400	1086	7.4	0	6.3	0	8.9	0.1
057010500	2514	20.5	0.6	16.9	0.5	24.0	1.2
057010600	2106	18.3	0.3	15.4	0.1	20.7	0.3
057010700	2241	23.0	1.0	19.3	0.8	26.8	1.8
057010800	1714	28.4	0.9	22.2	0.6	32.0	1.2
057010900	1428	10.7	1.3	8.7	1.0	13.0	1.8
057011000	3627	11.3	0.1	8.8	0.1	13.2	0.1
057011100	1952	11.4	0.1	9.4	0.1	13.4	0.1
057011200	1043	17.3	0.7	13.0	0.5	20.6	1.0
061980200	898	15.5	2.2	13.5	2.0	17.3	5.7
061980300	814	13.1	5.4	11.8	4.5	17.1	11.1
063021105	679	5.0	3.4	3.7	2.5	6.2	4.6
069960200	2490	18.5	5.7	13.9	4.6	22.7	6.4
069960300	2602	10.6	5.2	6.9	3.3	12.6	6.0
069960400	751	19.0	4.8	11.2	2.8	22.0	9.2
071950100	1261	15.9	1.3	7.7	1.0	17.6	1.5
071950200	3497	11.0	2.2	6.5	1.6	12.5	6.1
071950300	514	14.8	3.7	8.9	2.3	16.1	5.1
071950400	468	26.3	6.8	6.8	2.8	28.6	8.1
071950500	3740	13.2	3.5	9.2	2.6	14.8	8.3

Table 17. South Carolina Mailout/Mailback UAA Rates by Tract (continued)

Tract Number	Number of Housing Units	UAA Rate for Initial Mailing	UAA-Vacant Rate for Initial Mailing	UAA Rate for Both Mailings	UAA-Vacant Rate for Both Mailings	UAA Rate for Either Mailing	UAA-Vacant Rate for Either Mailing
071950600	3661	24.0	0.5	15.2	0.3	27.6	1.0
079000100	942	8.4	2.7	6.9	2.3	9.4	3.6
079000200	855	12.9	2.9	10.4	2.3	16.1	5.7
079000300	1295	9.2	2.0	6.4	1.2	11.4	2.9
079000400	951	8.8	3.0	6.9	2.4	12.6	4.3
079000500	1128	11.8	4.5	8.4	2.8	14.7	7.3
079000600	1116	10.7	3.7	7.4	2.5	12.3	5.8
079000700	1029	12.4	4.6	9.2	3.1	14.2	9.0
079000800	8	50.0	0	50.0	0	62.5	0
079000900	1476	15.9	9.0	12.5	6.9	20.4	11.7
079001000	1400	14.3	7.1	11.8	5.0	15.4	8.6
079001100	2341	6.7	5.6	3.8	3.2	7.7	6.6
079001200	784	4.1	2.6	2.8	1.5	5.0	3.4
079001300	1547	20.8	6.0	17.0	4.6	22.8	8.5
079001400	469	13.0	4.3	10.2	3.0	16.2	6.2
079001500	214	12.6	7.0	9.8	6.1	17.8	11.2
079001600	511	22.1	4.1	18.6	3.1	25.2	17.8
079001800	149	4.7	2.7	2.7	1.3	6.0	4.0
079002001	1073	2.8	1.0	2.3	0.8	4.2	1.6
079002002	241	18.3	9.1	13.7	7.1	19.9	11.2
079002100	1591	5.0	3.0	3.5	1.9	6.9	3.8
079002200	771	5.4	1.9	4.5	1.7	6.9	2.6
079002300	1077	2.8	1.6	1.9	0.8	3.6	2.5
079002400	1536	5.0	2.9	3.0	1.8	6.3	4.9
079002500	2048	6.7	2.1	5.1	1.3	7.6	3.1
079002600	5027	6.9	1.6	5.6	1.3	8.3	2.2
079002700	1947	5.4	2.1	4.0	1.5	6.5	2.6
079002800	914	11.8	7.0	8.8	5.1	14.6	10.4

Table 17. South Carolina Mailout/Mailback UAA Rates by Tract (continued)

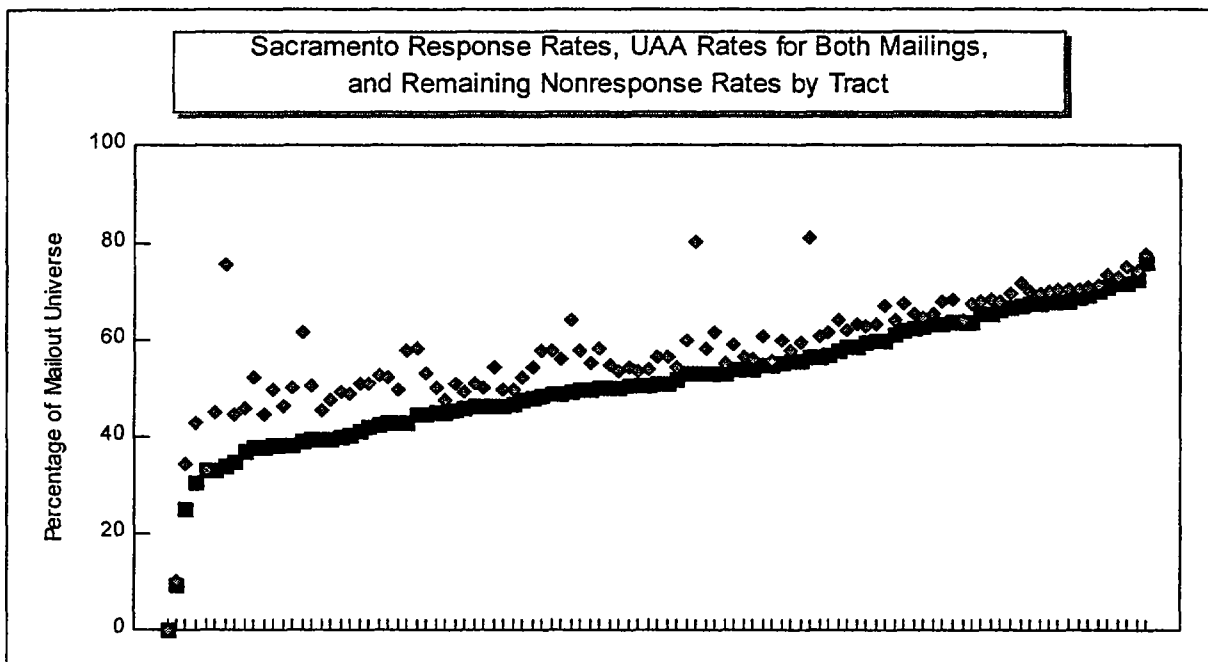
Tract Number	Number of Housing Units	UAA Rate for Initial Mailing	UAA-Vacant Rate for Initial Mailing	UAA Rate for Both Mailings	UAA-Vacant Rate for Both Mailings	UAA Rate for Either Mailing	UAA-Vacant Rate for Either Mailing
079010100	3628	10.2	2.5	7.0	1.1	11.8	3.0
079010200	1751	8.0	3.5	5.7	2.0	9.1	3.7
079010302	148	8.1	5.4	6.1	4.1	8.8	5.4
079010303	2989	5.0	2.0	2.5	1.0	5.7	2.6
079010304	2806	9.7	5.0	2.5	1.4	10.7	6.1
079010305	2384	2.5	1.5	1.8	1.0	3.4	2.2
079010403	2938	17.4	7.8	13.6	6.8	20.6	9.9
079010404	3445	27.1	1.4	19.8	1.0	29.2	3.4
079010405	4347	8.0	2.8	5.9	2.2	10.4	3.7
079010406	2148	4.8	2.4	3.9	2.2	6.6	2.7
079010501	854	5.6	0.1	4.6	0.1	6.7	0.8
079010502	416	11.3	1.0	8.2	0.7	18.0	1.7
079010600	2605	7.9	3.3	5.6	2.4	10.2	4.1
079010701	1204	9.8	0.8	9.1	0.7	11.5	2.2
079010702	1173	5.5	1.7	4.7	1.2	6.1	3.2
079010703	1494	4.7	2.3	3.4	1.6	5.0	2.7
079010802	533	36.4	2.6	29.3	0.4	43.0	2.8
079010803	1037	7.9	5.9	1.5	1.0	8.1	5.9
079010804	1141	9.6	3.5	6.9	1.8	10.7	4.6
079010900	1070	6.4	2.2	5.5	2.1	8.1	2.7
079011000	741	14.2	6.3	10.4	3.2	14.8	7.3
079011101	1490	2.9	1.9	1.7	1.1	3.6	2.7
079011102	1652	4.1	2.2	1.5	0.7	5.0	3.7
079011201	1126	8.9	1.7	1.8	0.6	9.6	2.7
079011202	1861	4.2	2.1	3.4	1.8	4.8	3.5
079011301	3780	5.6	2.5	3.7	1.6	10.2	4.3
079011303	1722	8.3	6.4	1.5	0.8	8.9	7.3
079011304	2271	6.0	4.1	0.7	0.6	6.4	4.3

Table 17. South Carolina Mailout/Mailback UAA Rates by Tract (continued)

Tract Number	Number of Housing Units	UAA Rate for Initial Mailing	UAA-Vacant Rate for Initial Mailing	UAA Rate for Both Mailings	UAA-Vacant Rate for Both Mailings	UAA Rate for Either Mailing	UAA-Vacant Rate for Either Mailing
079011305	2233	9.0	6.5	0.8	0.3	9.1	6.6
079011403	2895	7.2	4.6	1.6	0.5	7.8	5.0
079011404	1964	6.9	4.0	4.2	2.5	7.9	4.7
079011405	3565	8.5	4.1	2.8	1.6	9.2	4.6
079011406	4470	4.5	1.7	1.8	0.5	4.7	1.8
079011500	1743	4.0	1.8	0.9	0.6	4.8	2.7
079011603	1544	6.5	4.6	5.4	3.9	8.1	7.1
079011604	2367	2.7	2.1	1.8	1.3	3.1	2.9
079011605	3336	5.4	3.1	4.1	2.5	8.3	5.9
079011606	1443	3.3	2.8	2.8	2.4	4.0	3.7
079011701	1097	15.4	4.9	9.0	2.7	17.8	7.7
079011702	1237	5.7	1.4	3.6	1.0	9.3	4.8
079011800	2303	11.0	1.1	7.9	0.7	12.9	2.0
079011901	2329	3.7	1.3	2.5	0.8	5.9	3.8
079011902	1966	6.2	1.5	5.1	0.9	9.3	2.8
079012000	1641	10.6	0.9	8.1	0.1	12.9	1.3
087030100	1110	10.1	7.3	7.3	5.6	10.9	8.3
087030200	1573	15.5	8.7	13.7	7.6	17.3	9.6
087030300	2180	9.4	5.9	6.1	3.9	10.4	7.0
087030400	2431	14.2	2.9	12.7	2.1	15.5	3.8
087030500	786	4.2	2.8	2.3	1.3	5.0	3.6
087030600	501	2.2	1.4	1.2	0.8	3.8	2.0
087030700	1256	4.8	2.8	3.7	2.1	5.6	4.1
087030800	552	3.4	0.7	2.2	0.4	4.9	0.9
087030900	616	3.4	1.0	2.1	0.5	3.9	1.1

Graphical Depiction of Tract Nonresponse Rates as Affected by UAA Rates

Graph 1.



Graph 2.

